



Application No. 10/606,546
Amendment dated November 19, 2004
Reply to Office Action of September 7, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A perpendicular magnetic recording medium, comprising:

a hard magnetic recording layer;

a soft magnetic layer; and

a non-magnetic intermediate layer between the hard magnetic recording layer and the soft magnetic layer, the hard magnetic recording layer comprising:

an hcp-structured layer; and

a Co-alloy layer comprised of ~~either a Co₃Pt-alloy layer or an hcp CoPt-based alloy~~ ~~a Co₃Pt phased (CoCr)₃Pt alloy~~ layer positioned adjacent to the hcp-structured layer.

2. (Original) The recording medium of claim 1, wherein the hcp-structured layer comprises CoPtXY, where X is a grain-refining material, and Y is an element selected from the group consisting of: Ta, Cr, Nb, Mo, Si, and Ge.

3. (Original) The recording medium of claim 2, wherein the grain-refining material comprises a material selected from the group of: B, C, Zr, and Hf.

4. (Original) The recording medium of claim 2, wherein the grain-refining material comprises an oxide.

5. (Original) The recording medium of claim 4, wherein the grain-refining material comprises a material selected from the group of: SiO₂, Al₂O₃, CoO, CrO₂, and NiO₂.

6. (Original) The recording medium of claim 1, wherein non-magnetic intermediate layer comprises:

a seedlayer; and

an underlayer positioned adjacent to the seedlayer.

7. (Original) The recording medium of claim 6, wherein the underlayer

comprises:

an hcp material.

8. (Canceled)

9. (Canceled)

10. (Currently Amended) ~~The recording medium of claim 8, A~~
perpendicular magnetic recording medium, comprising:

a hard magnetic recording layer;

a soft magnetic layer; and

a non-magnetic intermediate layer between the hard magnetic
recording layer and the soft magnetic layer, the hard magnetic recording layer comprising:

an hcp-structured layer; and

a Co-alloy layer comprised of a Co₃Pt phased material layer
positioned adjacent to the hcp-structured layer;

wherein the Co₃Pt phased material comprises a Co₃Pt-based alloy including one or more of: Ta, B, Cr, Nb, Mo, Si, and Ge.

11. (Currently Amended) A magnetic disc drive storage system, comprising:

a magnetic recording head having an air bearing surface; and

a perpendicular magnetic recording medium positioned adjacent the air bearing surface of the magnetic recording head;

the perpendicular magnetic recording medium comprising a hard magnetic recording layer, a soft magnetic layer, and a non-magnetic intermediate layer between the hard magnetic recording layer and the soft magnetic layer, and the hard magnetic recording layer comprising an hcp-structured layer, and a Co-alloy layer comprised of ~~either a Co₃Pt alloy layer or an hcp CoPt-based alloy~~ a Co₃Pt phased (CoCr)₃Pt alloy layer positioned adjacent to the hcp-structured layer.

12. (Original) The system of claim 11, wherein the hcp-structured layer comprises CoPtXY, where X is a grain-refining material, and Y is an element selected from the group consisting of: Ta, Cr, Nb, Mo, Si, and Ge.

13. (Original) The system of claim 12, wherein the grain-refining

material comprises a material selected from the group of: B, C, Zr, and Hf.

14. (Original) The system of claim 12, wherein the grain-refining material comprises an oxide.

15. (Original) The system of claim 14, wherein the grain-refining material comprises a material selected from the group of: SiO_2 , Al_2O_3 , CoO , CrO_2 , and NiO_2 .

16. (Original) The system of claim 11, wherein non-magnetic intermediate layer comprises:

a seedlayer; and

an underlayer positioned adjacent to the seedlayer.

17. (Original) The system of claim 16, wherein the underlayer comprises:

an hcp material.

18. (Canceled)

19. (Canceled)

20. (Currently Amended) ~~The system of claim 18,~~ A magnetic disc drive storage system, comprising:

a magnetic recording head having an air bearing surface; and

a perpendicular magnetic recording medium positioned adjacent the air bearing surface of the magnetic recording head;

the perpendicular magnetic recording medium comprising a hard magnetic recording layer, a soft magnetic layer, and a non-magnetic intermediate layer between the hard magnetic recording layer and the soft magnetic layer, and the hard magnetic recording layer comprising an hcp-structured layer, and a Co-alloy layer comprised of a Co_3Pt phased material layer positioned adjacent to the hcp-structured layer;

wherein the Co_3Pt phased material comprises a Co_3Pt -based alloy including one or more of: Ta, B, Cr, Nb, Mo, Si, and Ge.